THE offer of nomination for appointment by the Crown on the governing body of the Imperial College of Science and Technology has been accepted by the Earl of Crewe, Lord President of the Council; Mr. Gerald W. Balfour; Sir Francis Mowatt, G.C.B.; Sir Julius C. Wernher, Bart.; Sir William H. White, K.C.B., F.R.S.; and Dr. MacAlister, principal of the University of Glasgow. The other persons nominated as first members of the governing body are:—by the President of the Board of Education, Mr. A. H. D. Acland; Mr. F. G. Ogilvie, C.B., a principal assistant secretary of the Board of Education; Mr. J. C. G. Sykes, an assistant secretary of the Board; and Dr. R. T. Glazebrook, F.R.S., director of the National Physical Laboratory; by the University of London, Sir E. H. Busk, past Vice-Chancellor of the University; Prof. Capper; Prof. Farmer, F.R.S.; Sir Henry E. Roscoe, F.R.S.; and Sir A. W. Rücker, principal of the University; by the London County Council, Mr. A. A. Allen, M.P.; Mr. H. Percy Harris, chairman of the Council; Sir C. Kinloch-Cooke; Mr. R. A. Robinson; and Mr. J. T. Taylor; by the City and Guilds of London Institute, the Earl of Halsbury, F.R.S., chairman of the council of the institute; Sir J. Wolfe Barry, K.C.B., F.R.S.; Sir Owen Roberts, clerk to the Clothworkers' Company; Sir Walter S. Prideaux, clerk to the Goldsmiths' Company; and Sir John Watney, hon. sec. of the institute; by the Royal Commissioners for the Exhibition of 1851, Viscount Esher, G.C.V.O., K.C.B., and Lieut.-Colonel Sir Arthur Bigge, G.C.V.O., K.C.B.; by the Royal Society, Sir Archibald Geikie, F.R.S.; by the professorial staff, Prof. Tilden, F.R.S., Prof. Gowland, and Prof. Dalby; by the Institution of Civil Engineers, Sir Alex. B. W. Kennedy, F.R.S., president of the institution; by the Institution of Mechanical Engineers, Mr. T. Hurry Riches, president of the institution; by the Institution of Electrical Engineers, Mr. R. Kaye Gray, past-president of the institution; by the Iron and Steel Institute, Sir Hugh Bell, Bart., president of the institute; by the Institution of Naval Architects, Dr. F. Elgar, F.R.S.; by the Society of Chemical Industry, Dr. E. Divers, F.R.S., past-president of the society; by the Institution of Mining Engineers, Mr. A. Sopwith, past-president of the Institution; and by the Institution of Mining and Metallurgy, Mr. W. McDermott, past-president of the institution. The draft charter for the establishment of the college will be submitted to His Majesty for approval at the council fixed for July 6.

THE Board of Education has published (Cd. 3538) a summary of figures relating to State-aided secondary schools in England. The number of schools dealt with in the summary is 600, but in addition to these there are ninety-three secondary schools provisionally recognised by the Board or seeking recognition, though these are not included. The total number of scholars, excluding pupil teachers, in the 600 schools is 104,938. About 80 per cent. of the total number of scholars are fifteen years of age or under, and the remaining 20 per cent. represent the number of pupils in State-aided secondary schools more than fifteen years of age. About a quarter of the total number of pupils in these secondary schools previously attended public elementary schools and are paying no fees in the secondary schools, while 54 per cent. of the total number previously attended public elementary schools. It is important to remember that the curriculum of secondary schools receiving grants from the Board of Education is dominated by a four years' course of work designed for children who will remain at school until they have completed their sixteenth year at least, and that no grants are paid for pupils under twelve years of age—nearly a quarter of the above total—nor for those who have completed the approved course. There seems, in fact, to be little relation between the character of the prescribed course and the special needs of the majority of the children. If 80 per cent. of the pupils finish their school life at fifteen or under, the curriculum might with advantage be modified in such a way that thoroughness and completeness in a few fundamental subjects may be secured by the majority of the pupils rather than to allow them to fritter away their few valuable years in beginning a course of work which is doomed to be left unfinished and from which little advantage can be gained.

NUMEROUS handsome bequests have been reported in *Science* during the last three months, and in addition to specially large gifts there has been a continuous record of munificence as represented by sums which are small only when judged by American standards. Among other large amounts, the following deserve special mention:—Creighton University has received 500,000*l*. under the will of the late Mr. J. A. Creighton; Teachers College, Columbia University, has been presented with 80,000*l*. by an anonymous donor, and 60,000*l*. under the will of the late Mr. F. P. Furnald. The State Legislature has provided the University of Alabama with 80,000*l*. for buildings and 5000*l*. a year for maintenance. Dartmouth College benefits to the extent of 50,000*l*. under the will of the late Captain Thomas P. Salter. The University of Chicago has received land from Mr. J. B. Rockefeller worth more than 500,000*l*. The Princeton University has received anonymously a gift of 240,000*l*.

DR. J. C. MCLENNAN, for some years director of the physical laboratory in the University of Toronto, has been elected to the professorship of physics in succession to Dr. James Loudon.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 23.—"The Relation of Thallium to the Alkali Metals: a Study of Thallium Sulphate and Selenate." By Dr. A. E. H. **Tutton**, F.R.S.

The author finds that the crystals of thallium sulphate and selenate resemble those of the analogous salts of potassium, rubidium, cæsium, and ammonium adequately closely morphologically to enable them to be classed in the same orthorhombic isomorphous series, the average difference of corresponding interfacial angles on analogous potassium and thallium salts being less than half a degree, and the maximum difference only just exceeding a degree. These differences, however, though small, are greater than those between any other of the salts, the average difference, irrespective of direction, being proportional to the higher atomic weight of thallium.

The law revealed by the author's former work, that the changes in the interfacial angles are progressive functions of the atomic weights of the interchanged metals, only applies, however, to potassium, rubidium, and cæsium, which belong strictly to the same family group of the periodic classification of the elements; for the differences in the case of thallium occur in either direction indifferently.

The molecular volumes and topic axial ratios (separation along axial directions of centres of contiguous molecules) are almost identical with those of analogous rubidium and ammonium salts, so that structurally thallium comes alongside rubidium and ammonium, intermediate between potassium and cæsium.

Optically, however, the thallium salts are quite different, the refractive indices, molecular refractions, and dispersion being far higher, indicating the essential chemical difference of thallium from the true alkali metals and ammonium.

Entomological Society, June 5.—Mr. C. O. Waterhouse, president, in the chair.—*Leioptilus carphodactylus* in Britain: Dr. T. A. **Chapman.** A living example; one of the first bred British specimens.—*Microdon mutabilis* and *Kleditoma myrmecophila*: H. St. J. **Donisthorpe.** A specimen of *Microdon mutabilis*, with the empty pupa-case, bred from a larva taken in the nest of *Formica fusca* at Porlock, April, 1907; also ♂♂ and ♀♀ of *Kleditoma myrmecophila*, n.sp., bred last month from a nest of *Lasius fuliginosus* found at Wellington College in March.—New Phytophaga from Australia: M. **Jacoby.** Examples of small beetles, new to science, of the new genus Clythridæ (Phytophaga), including *Leasia australis*, Jac.—Types of Proctotrupidæ: A. J. **Chitty.** The three types of the three species of Proctotrupidæ described by Westwood, but entirely overlooked by subsequent authors.—A parasitic South African fly: E. E. **Austen.** Examples of *Cordyloba anthropophaga*, Grunb., an African fly, parasitic in the larval stage on human beings and animals—a true Muscid—hitherto confused with another fly. The author exhibited *Bengalia depressa*, Walk., a totally different insect.—The significance of some secondary sexual characters in butterflies: Prof. E. B. **Poulton.**—Report of entomological observations made in South Africa during the visit of the British Association in 1905: Dr. F. A. **Dixey** and Dr. G. B. **Longstaff.**

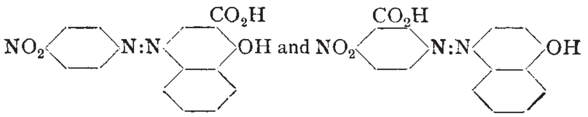
Linnean Society, June 6.—Prof. W. A. Herdman, F.R.S., president, in the chair.—Contributions to our knowledge of New Zealand Holothurians: Prof. **Dendy** and E. **Hindle.**—Report on the marine fishes collected by Mr. Stanley Gardiner in the Indian Ocean: C. Tate **Regan.** The collection contained examples of nearly 200 species, more than fifty of which were new to science, among them some remarkable new generic types. A large proportion of the new species were dredged at considerable depths, and the others chiefly belonged to genera the species of which have been supposed to be more variable and more widely distributed than proves to be the case.—The Ixodidæ collected in the above expedition: Prof. **Neumann.**

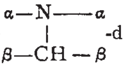
Physical Society, June 14.—Mr. H. M. Elder, vice-president, in the chair.—The electric arc: Mr. **Upson.** Arcs were described in which the electrodes consisted of carbon, copper, iron, and aluminium in different combinations, maintained in air, hydrogen, and coal-gas. With 110 volts supply, metal arcs in hydrogen took the form of a spark discharge. At that voltage the maximum length of arc it was possible to obtain, with current up to 15 amperes, was 0″·05, except where both electrodes were of the same metal. When carbon is one of the electrodes a true arc is formed. If carbon is negative the maximum length of arc with the above voltage is 0″·07. Volt-ampere characteristic curves were shown for arcs in air and hydrogen of length 0″·05. The general position of the curve is determined by the material of the negative electrode. With carbon negative, in hydrogen, the curves for various positive electrodes very nearly coincide. With carbon positive, they keep the same curvature, but vary in distance apart, according to the material of the negative. In general, the position of the curve is governed by the negative, but its particular shape seems to come from the influence of the surrounding gas.—The Poulsen arc as a means of obtaining continuous electrical oscillations: Dr. J. A. **Fleming.** Dr. Fleming showed and described an apparatus for forming an electric arc in an atmosphere of coal-gas between a carbon rod kept in slow rotation and a cooled copper anode, the arc being formed in a magnetic field of 600 to 1000 C.G.S. units. The arc was supplied with continuous current at a pressure of 400–500 volts. A condenser of 0·003 mfd. capacity in series with an inductance of 200,000 cm. was shunted across the arc, and experiments shown to prove the existence of high-frequency oscillations in the condenser circuit. A long resonance helix of insulated wire was then joined to the condenser circuit, and when tuned to it created a powerful high-frequency field round it in which vacuum tubes glowed brilliantly. By vibrating or rotating a neon vacuum-tube of spectrum type near the helix, and showing that the band or disc of light was cut up by dark spaces, Dr. Fleming supported the contention that the oscillations so produced are not absolutely uninterrupted, but cut up into groups.—A direct-reading conductivity bridge for testing rods of steel or other material, where there is considerable range of conductivity between successive specimens, and where it is necessary to eliminate the resistance of end contacts: R. **Appleyard.**

Chemical Society, June 20.—Sir William Ramsay, K.C.B., F.R.S., president, in the chair.—Some properties of radium emanation: A. T. **Cameron** and Sir W. **Ramsay,** K.C.B. It has been discovered that the emanation from radium undergoes a rapid change of volume shortly after its change from the solid to the gaseous state; this is followed by a slow change corresponding with its loss of electrical activity. It has been shown by thirty sets of measurements that the emanation behaves in accordance with Boyle's law, both before and after this preliminary change. Measurements have been made of the initial volume of the emanation obtained from a solution of 87·7 milligrams of radium (metal) as bromide and sulphate. From these it would appear that, instead of the previously accepted value for the average life period of radium, 1100 years, a much shorter life must be deduced, namely, 236 years.—The affinity constants of amino-sulphonic acids as determined by the aid of methyl-orange: V. H. **Veley.** The affinity constants of the aminonaphthol-sulphonic acids when determined by the tintometer method show, as regards the effect of the introduction of the hydroxyl grouping in the naphthylaminesulphonic acids, relationships similar to those observed by Ostwald by the electric conductivity method for the hydroxybenzoic acids as compared with benzoic acid. One possible case of steric hindrance induced by the introduction of the hydroxyl grouping in the 8-position was noted.—Azo-derivatives of 1:3-diphenylbarbituric acid. Dynamic isomerism among the coloured hydrazones of 1:3-diphenylalloxan: Miss M. A. **Whiteley.** In order to throw some light on the structure of the compounds obtained by the action of aromatic diazonium chlorides on the 5-alkyl-substituted derivatives of 1:3-diphenylbarbituric acid, the investigation has been extended, and the action of the β-substituted derivatives of phenylhydrazine on 5:5-dibromo-1:3-diphenylbarbituric acid has been examined. The results show that the yellow compounds obtained in the first reaction are azo-derivatives, whilst the red ones obtained in the second are hydrazones.—A series of coloured diazo-salts derived from benzoyl-1:4-naphthylenediamine: G. T. **Morgan** and W. O. **Wootton.** The examination of the diazo-salts of benzoyl-*p*-phenylenediamine and benzoyl-1:4-naphthylenediamine has been continued, and it has been found that the diazo-derivatives of the latter base are extremely stable substances which are invariably coloured. These coloured salts might be regarded either as *syn*-diazo-derivatives or as equilibrium mixtures of diazonium and *syn*-diazo-derivatives, although their great stability somewhat militates against the assumption that they consist wholly or in part of *syn*-diazo-compounds.—Colour and constitution of azo-compounds, part i.: J. T. **Hewitt** and H. V. **Mitchell.** The authors recently directed attention to the very marked change in colour when *p*-nitro-derivatives of arylazo-*p*-phenols were dissolved in alkalis. The explanation was offered that, whilst benzeneazophenol forms alkaline salts of corresponding constitution, the *p*-nitro-derivatives furnish salts with the metal attached to the nitro group, and therefore diquinonoid in structure. The relationships are rendered apparent by the formulæ

$$C_6H_5.N:N.C_6H_4.OK \text{ and } KO_2N:C_6H_4:N.N:C_6H_4:O.$$

Comparison of the two carboxylic acids



indicates that the frequency of the absorbed light is lowered by increase in the length of the chain of alternate single and double linkings. The introduction of substituents may modify the length of the chain owing to the possibility of more stable salt formation in other directions.—The oxidation of hydrazines by free oxygen: F. D. **Chattaway.**—Calmatambin: a new glucoside: F. L. **Pyman.** This glucoside from the bark of a West African tree, probably *Canthium glabrifolium*, has the formula $C_{19}H_{28}O_{13},2H_2O$, contains one methoxyl group, and is readily hydrolysed by dilute acids and by emulsin forming calmatambetin, $C_{13}H_{18}O_8,\frac{1}{2}H_2O$, together with dextrose. The former is readily decomposed by the action of dilute acids, and yields a small amount of a scarlet, crystalline substance, $C_{11}H_{12}O_3$.—The decomposition of hyponitrous acid in presence of mineral acids: P. C. **Rây** and A. C. **Gangûli.** Hyponitrous acid when liberated from silver or mercurous hyponitrite by the action of dilute nitric, hydrochloric, or sulphuric acid at 25° decomposes at once according to the equations (1) $2HNO = H_2O + N_2O$, (2) $5HNO = 2H_2O + HNO_3 + 4N$.—The chemical composition of petroleum from Borneo: H. O. **Jones** and H. A. **Wootton.** The petroleum from Borneo consists of approximately equal quantities of homologous hydrocarbons of the paraffin, *cyclo*-hexane, and aromatic series, and contains the members of the naphthalene series to the extent of about 6 per cent. to 7 per cent.—The synthesis of phenonaphthacridines: trimethylphenonaphthacridines: A. **Senier** and P. C. **Austin.**—The condensation of aldehydes with mixtures of α-naphthol and α-naphthylamine: synthesis of 7-aryl-  $\overset{\alpha-N-\alpha}{\underset{\beta-CH-\beta}{|}}$ -dinaphthacridines: A. **Senier** and P. C. **Austin.**—An improved form of apparatus for the rapid estimation of sulphates and salts of barium: W. R. **Lang** and T. B. **Allen.** The authors have simplified the apparatus of Tarugi and Bianchi for the estimation of sulphates and salts of barium by a volumetric method based on the rapid clearing of turbid solutions in tubes of narrow calibre.—The determination of sugar by Fehling's solution: W. R. **Lang** and T. B. **Allen.** The apparatus described by the authors (preceding paper) was also employed for the determination of dextrose by means of Fehling's solution.—Studies in asymmetric synthesis, vi., the asymmetric synthesis of the optically active tartaric acids: A. **McKenzie** and H. **Wren.** The asymmetric synthesis of *l*-tartaric acid was accomplished in three ways:—(1) by the oxidation of *l*-bornyl fumarate in glacial acetic acid solution by potassium permanganate; (2) by the oxidation of the potassium salt of *l*-bornyl hydrogen fumarate in aqueous solution by potassium permanganate; (3) by the oxidation of *l*-menthyl fumarate in an analogous manner. The asymmetric synthesis of *d*-tartaric acid was accomplished by the oxidation of the potassium salt of *d*-bornyl hydrogen fumarate.—Some derivatives of 2-phenyl-1:3-naphthylenediamine, part i.: N. **Lees** and J. F. **Thorpe.** Typical derivatives of the base have been prepared and investigated, and the conditions have also been determined under which it is converted into the corresponding dinaphthol and the two amino-naphthols.

EDINBURGH.

Royal Society, May 6.—Dr. Robert Munro in the chair.—Inbreeding in the Barbary sheep and in the common goat: Prof. J. C. **Ewart,** F.R.S. The herd of Barbary sheep, which had been living for about a century at Abercairney, in Perthshire, seemed to be as vigorous and prolific now as when they were first introduced, and yet there had been no fresh blood added for at least fifty years. The problem was, why should this vigour continue in spite of inbreeding? To answer this question a series of experiments had been begun in 1899 with a pair of common goats. The great-great-grandson in 1905 was as vigorous as the original male, whom he closely resembled, and his offspring with the grand-daughter of the original pair were decidedly more vigorous than the first pair of goats born in 1900. It was found that, as a rule, the offspring of immature males was weak, and that it was more important for the male to have reached his full strength than for the female to have reached maturity. One reason why inbreeding in herds did not lead to deterioration seemed to be that the weaklings were eliminated, and every now and again there was a restoration of a vigorous ancestor.—Report on fossil fishes collected by the Geological Survey in the Lower Carboniferous rocks near Gullane, East Lothian: Dr. R. H. **Traquair,** F.R.S. The list contained thirteen species, of which two were new. A comparison with the fossils of other similar shales showed that the Gullane rocks corresponded most closely with the Wardie shales, there being eight of the thirteen species in common.—Heusler's magnetic alloy: Alexander D. **Ross.** The particular alloy experimented with had a composition of manganese 25 per cent., aluminium 12·5 per cent., a trace of lead, and the remainder copper. The aim of the research was to find how the magnetic susceptibility varied under various thermal treatment, such as heating up to different high temperatures, cooling down to the temperature of liquid air, and bringing back the alloy to its original state either suddenly or gradually. When quenched at 610° C., the material showed distinct diminution in permeability, which was not so marked when the quenching was from either higher or lower temperatures. This was perhaps the most interesting among a number of other results obtained.—The physical properties of mixed solutions of independent optically active substances: Clerk **Ranken** and Dr. W. W. **Taylor.** The properties chosen for measurement were the viscosity, the density, and the electric conductivity. The optically active substances were the normal potassium tartrates and the tartar emetics, and, for the sake of comparison, potassium racemate and racemic emetic. The independent optically active substance was cane sugar, and in one set of experiments maltose. Equivalent solutions of the three *d*, *l*, and *r* substances were made, and the physical properties determined at 15° C. and 25° C. A definite weight of sugar was then added, and the measurements again made. The general conclusion was that the addition of an independent optically active substance to solutions containing optically active stereoisomers does not cause any recognisable differences.

May 20.—Dr. Traquair, vice-president, in the chair.—A new method of ascertaining twist in single threads: Thomas **Oliver.** The usual microscopic method in the case of combed yarns is fairly accurate, but is very unsatisfactory in the case of carded woollen threads. The new method depended on the relation formerly obtained by the author between the "take-up" and the turns per inch in the twisted thread, and consisted in determining the number of turns required to give the maximum length as the thread was untwisted.—The influence of twist on the strength of a thread: Thomas **Oliver.** Under tensile stress the elongation of a thread is not quite proportional to the stress. With increasing stress the increment of elongation increases. At length a certain point is reached when the increment of length for a given increment of stress becomes distinctly greater, and goes on increasing to the breaking point. This yield point was chosen as an indication of the strength, and thus it was possible to compare the strengths of the thread in different conditions of twist without breaking it. The relation between the strength y and the number of turns of twist per inch x could be represented by the equation $y = bx^2/(x^2 + b^2/k)$, where b and k are constants for each thread. The paper contained a critical examination of a formula given in 1879 by Prof. Hartig, and of some conclusions advanced by Profs. Hübner and Pope in a paper on the influence of certain reagents on the tensile strength of cotton yarn.—Notes on some oligochætes found on the Scottish Loch Survey, and also on some Turbellaria from Scottish lochs: C. H. **Martin.** The notes were chiefly concerned with the genital organs, and one new species of oligochæte worms was described. An interesting point was noted in connection with the Turbellaria. This worm feeds on the Hydra. The nematocysts are not digested, but, retaining their vitality, work out to the external skin, finally assuming the position normally occupied in the Hydra.—The composition of red clay: Dr. F. W. **Clarke.** Fifty-one specimens of red clay from various localities had been supplied by Sir John Murray. These were combined in equal weights, and the composite sample so obtained carefully analysed. In most respects the analysis agreed fairly well with the average of the original *Challenger* analyses, but showed distinctly less iron and a small quantity of a number of minor elements not hitherto reported, such as titanium, barium, strontium, vanadium, &c.—The glaciation of east Lothian, south of the Garlton Hills: Prof. **Kendall** and E. R. **Baily.** This paper gave a detailed account of the glaciation of the district described, the positions and manner of formation of the various glacial lakes and their outflows being indicated as the ice advanced and retreated. Some interesting illustrations were given of the way in which a tributary falling into a flat valley formed an accumulation of detritus which finally turned back the course of the upper tributaries into another channel and quite altered the watershed. The view which explains certain so-called raised beaches as the result of glaciation was also emphasised. The evidence of the old lake basins and of the Boulder-clay deposits led to the same conclusions.

June 3.—Prof. Crum Brown, F.R.S., in the chair.—Temperature changes occurring in fresh-water lochs: E. M. **Wedderburn.** There were three types of temperature distribution occurring in the Scottish lochs. From December to March the temperature was practically uniform throughout; from April to July the heating of the surface waters led to a distribution in which the gradient of temperature with depth was at no place very rapid, but from August to November a "discontinuity temperature layer" came into existence, the so-called *Sprungschicht* of the Austrian and German naturalists. Down to the depth of this discontinuity layer the temperature varied very slowly, and below it, down to the bottom of the loch, there was an almost constant temperature, but within the layer the temperature varied very rapidly. This the author believed to be due to the action of the winds blowing over the surface and separating out the two great masses of water of different temperature and density. The explanation was illustrated experimentally by means of a trough containing a layer of salt water with a layer of fresh water above it. A blast of varying strength could be blown along the surface, causing the fresh water to heap up towards the leeward end, and producing a back current along the bottom of the fresh-water layer. This back current drew the upper layer of the salt water after it, and set up a feeble return current in the salt-water layer in the same direction as the original current on the surface due to the wind. When the blast ceased a seich-like movement was produced in the salt-water layer, exactly similar to the temperature seiche which had been observed in the Scottish lochs.—A specimen of *Helix pomatia* with paired male organs: Dr. J. H. **Ashworth.** In addition to the normal set of reproductive organs present on the right side, this specimen possessed on the left side a set of accessory male organs. The normal and supplementary male organs were equally developed and were symmetrically placed, and the supernumerary genital aperture occupied a position on the left side exactly corresponding to that of the normal aperture on the right side. The form of the supplementary organ supports the view that the present position of the genital ducts in Helix and other Stylommatophora has been derived from a condition existing in the ancestral form in which the vas deferens and penis were connected with the primitive genital aperture by means of a lateral groove, such as still exists in Pythia.—Encystment of Tardigrada: James **Murray.** This remarkable transformation began with the forming of a cyst under the original skin of the mature animal, the skin gradually shrivelling, the feet disappearing, and the creature reverting to an embryonic state with loss of all its principal organs. After a period of rest the organs develop again, and the animal finally emerges from its case exactly as it was before the encystment began.

PARIS.

Academy of Sciences, June 24.—M. Henri Becquerel in the chair.—A new mineral species from the high temperature fumerolles of the recent eruption of Vesuvius: A. **Lacroix.** The mineral has the composition

$$PbSO_4.(K \text{ or } Na)_2SO_4,$$

and the name palmierite is proposed for it.—A new method of preparing anhydrous oxide of lithium: M. **de Forcrand.** Pure lithium carbonate is heated to a temperature of 780° C. to 800° C. in a platinum boat in a current of dry hydrogen. In about three hours the whole of the carbon dioxide is eliminated, and pure Li_2O remains. The heat of solution of pure lithium monoxide, prepared in three different ways, was found to be 31·2 calories, or more than five calories higher than the previously accepted number of M. Beketoff.—The addition of water to ethylenic oxides by means of sulphuric acid: Louis **Henry.** Now that an application of Grignard's reaction gives a means of preparing ethylene oxides in a general manner, the author has studied the mode of hydrolysis by dilute acids, and gives a series of glycols, with their boiling points, which have been prepared.—The secretary announced the death of Charles Trepied, correspondant for the section of astronomy, and A. Crova, correspondant in the section of physics.—Observations of the comets *c* and *d*, 1907, made at the Observatory of Algiers: MM. **Rambaud** and **Sy.** Observations were made on eight nights between June 5 and 19. The positions of the comparison stars and the apparent positions of the comet are given.—A species of analytical geometry of systems of additive functions: Frédéric **Riesz.**—The functional equation of M. Fredholm: A. **Korn.**—Ensembles of functions and linear operations: Maurice **Fréchet.**—The secondary kathodic emission of metals under the influence of the α-rays: Marcel **Moulin.** The existence of a secondary radiation of the α-rays, at first generally admitted, has been called in doubt by several recent workers. Preliminary experiments in favour of the hypothesis of the existence of such secondary radiations are given.—Drops formed in a magnetic field: H. **Ollivier** and Pierre **Sève.**—Thermochemical data relating to the ammonio-mercuric base and its hydrates: H. **Gaudechon.** The immediate solution effected by a solution of potassium cyanide is utilised as a means of carrying out the thermochemical measurements. The data used as a basis for the calculations are indicated in full.—The nature of sulphammonium: P. **Lebeau** and P. **Damoiseau.** A repetition of the work of Henri Moissan and of Otto Ruff and Geisel. The latter indicate a reversible reaction between sulphur and ammonia, giving rise to nitrogen sulphide and ammonium sulphide. In the present paper it is shown that if minute precautions are taken to ensure the complete absence of moisture, neither nitrogen sulphide nor ammonium sulphide is formed. The weight of sulphur recovered after evaporation of the liquid ammonia is exactly the original weight, and no trace of sulphuretted hydrogen is given off during the evaporation.—The combinations between silicon and molybdenum. Molybdenum bisilicide: Ed. **Defacqz.**—The various molecular states of anhydrous ferric sulphate and hydrated ferric sulphate: A. **Recoura.**—Cuprous iodide: Marcel **Guichard.** All attempts to prepare cupric iodide by working at low temperatures failed. Hydriodic acid, liquefied at a low temperature on cupric chloride, gives rise at once to a mixture of cuprous iodide and free iodine. The iodine appears at the commencement of the reaction, and is easily separated either by solution or sublimation. A new method of analysis of iodides is given.—A study of the alloys of cobalt and tin: F. **Ducelliez.** The method of isolation and the properties of the alloy CoSn are described.—A molybdo-uranic combination: André **Lancien.** The precipitate formed by the interaction of ammonium molybdate and uranyl nitrate has the composition of uranyl molybdate, UO_2MoO_4.—Lupeol: E. **Jungfleisch** and H. **Leroux.** A comparison of the properties of the alcohol lupeol, isolated from different samples of gutta-percha.—The action of some esters of the α-iodo-fatty acids on the iodide of magnesium phenylamine and magnesium orthotoluidine iodide: F. **Bodroux** and F. **Taboury.**—The origin of the deposits of colouring matter in red wines: A. **Trillat.** The deposit is caused by the formation of an insoluble compound of the red colouring matter with acetaldehyde. In the absence of the aldehyde the red substance is not affected by the oxygen of the air.—The synthesis of an aldehyde possessing the odour of violets, cyclo-lemonylidene-propenol: Ph. **Barbier.** Lemonal and propionic aldehyde are condensed by dilute soda in weak alcoholic solution. The resulting aldehyde is treated with 60 per cent. sulphuric acid. Two aldehydes result, both possessing an intense odour of fresh violets, and superior to that of ionone. These have the drawback of oxidising very rapidly by exposure to air, and losing their smell in consequence.—The phenomena of coloration of brown bread: Gabriel **Bertrand** and W. **Mutermilch.**—Observations on the primordial leaves of various species of the genus Achillea: Léon **Dufour.**—The fungus-cultivating ants of Madagascar: H. **Jumelle** and H. Perrier **de la Bathe.**—Some variations observed in the rose: Lucien **Daniel.**—The morphological value of the spines of coral: Louis **Roule.**—The persistence of the trocophore in a Hesionian: C. **Viguier.**—Some new ideas on the white bearded gibbon, *Hylobates leucogenys*: Louis **Boutan.**—A general table of the encephalic weights as a function of the body weight: Louis **Lapicque.**—The association of unicellular algæ with *Sarcophytum mycetoides*: Ch. **Gravier.**—The measurement of the pulmonary field and its activity: Gabriel **Arthaud.**—The physiological action of some colouring matters and their urinary excretion: Jean **Gautrelet** and Henri **Gravellat.**—The relation between oceanic whirlpools and volcanoes: E. A. **Martel.**

NEW SOUTH WALES.

Linnean Society, March 27.—Annual general meeting.—Mr. Thomas Steel, president, in the chair.—Presidential address: Some questions in terrestrial physics: T. **Steel.** The first section was devoted to a discussion of radium and the earth's internal heat, the nature of radium and the phenomena accompanying its disintegration being described. The consequences of the acceptance of the theory that the present internal heat of the earth is due to radium contained in the crust were detailed, and the immense importance of the theory in connection with the problems of geological time fully considered. The concluding portion consisted of a consideration of the question of the influence on climate of possible variations in the composition of the atmosphere, more especially with regard to its carbon dioxide content. The manner in which climate is influenced by the amount of this substance in the air was clearly described, and the causes leading up to its removal or replacement were discussed. Consideration was also given to the possibility of climate being influenced by the earth's internal heat. The address concluded with a brief account of some of the proofs of the former glaciation of the earth's surface to regions well within the tropics, and with the possible explanation of this phenomenon by mutations in climate caused by variations in the carbon dioxide in the atmosphere.—Ordinary monthly meeting, Mr. A. H. S. Lucas, president, in the chair.—Decapod Crustacea from Norfolk Island: the late F. E. **Grant** and Allan R. **McCulloch.**—Descriptions of Australian Microlepidoptera, part xix., Plutellidæ: E. **Meyrick.** In the "Handbook of British Lepidoptera," the family Plutellidæ was regarded as comprising the three groups Yponomeuta, Glyphipteryx, and Plutella. In the present paper, not without due consideration, the family receives a more extended application so as to include, in addition, Gracilaria and Zelleria, formerly included in the Tineidæ.

April 24.—Mr. A. H. S. Lucas, president, in the chair.—Descriptions of new or little-known Desmids found in New South Wales: G. I. **Playfair.** Dr. Otto Nordstedt has recorded nine species from the Blue Mountains, and Dr. M. Raciborski seventy-seven species from Centennial Park, Sydney, the papers of these two writers representing the only published contributions to a knowledge of New South Wales Desmids available at present. The material studied by the author represents about 350 species, of which 230 have been identified as forms not restricted to New South Wales, fifty require further investigation, and seventy are treated and figured in the present paper, of which fifty are regarded as previously undescribed.—Revision of the Thynnidæ (Hymenoptera), part i.: Rowland E. **Turner.** The present paper, part i., treats of the subfamilies Diamminæ and Thynninæ, the former comprising only one genus, Diamma, represented by a single species, and the latter seven genera and two subgenera, represented by 102 species, of which forty-six are described as new.—Contributions to a knowledge of Australian Foraminifera, part ii.: E. J. **Goddard** and H. I. **Jensen.** The material described in this and previous papers has been obtained from localities sufficiently far removed from one another to enable the authors to make deductions regarding the distribution of Foraminifera in Australian waters, and also to discuss the probable conditions of climate and deposition at the time the Table Cape beds were laid down.

CALCUTTA.

Asiatic Society of Bengal, May 1.—An abnormal branch of the mango (*Mangifera indica*, Linn.): I. H. **Burkill** and G. Chunder **Bose.** A young grafted mango bore two abnormal branches, which were leafy along one side, but flowering along the other. The internal anatomy of the larger branch was studied, and it was ascertained that the xylem was much more developed on the leafy than on the flowering side.—Note on the Shahin falcons (*Falco peregrinator* and *F. barbarus*): Lieut.-Colonel D. C. **Phillott.** Their habits, breeding, employment in falconry, and Eastern names.—Note on the red-headed merlin (*Æ salon chiquera*): Lieut.-Colonel D. C. **Phillott.** Its breeding, habits, and use in falconry.—Magnetic induction in spheroids: D. N. **Mallick.** This paper deals with the problem of magnetic induction in a magnetic substance in the form of a prolate spheroid, due to a current circulating in a wire wrapped round it along a part of its length.—The fats of Garcinia species: D. **Hooper.** The author enumerates four species of Garcinia the seeds of which are known to yield fixed oils, employed for lighting, edible, and medicinal purposes. Two of these have been examined by the author, who confirms the analysis of Heise in showing that the fat of *G. indica* consists chiefly of oleodistearin, and from an examination of gamboge butter, the semi-solid fat of *G. Morella*, its constitution is shown to be that of stearo-diolein.

DIARY OF SOCIETIES.

THURSDAY, July 4.

Chemical Society, at 8.30.—*iso*Nitroso and Nitrodimethyldihydroresorcin: P. Haas.—The Structure of Carbonium Salts: F. Baker.—Studies of Dynamic Isomerism, Part VI., The Influence of Impurities on the Mutarotation of Nitrocamphor: T. M. Lowry and E. H. Magson.—The Relation between Absorption Spectra and Chemical Constitution, Part VIII., The Phenyl Hydrazones and Osazones of α-Diketones: E. C. C. Baly, W. B. Tuck, E. G. Marsden, and M. Gazdar.—Permanganic Acid: M. M. P. Muir.

Association of Economic Biologists (Imperial Institute), at 11.30 a.m.—Some Notes on Ticks: C. Warburton.—A Remedy for the Spruce-gall and Larch-blight Diseases: E. R. Burdon.—Demonstration in the Public Galleries of the Imperial Institute by Mr. W. G. Freeman, the Superintendent of the Colonial Collections.—At 2 p.m.—A Note on the Cecidomyidæ or Gall-midges: W. E. Collinge.—The American Gooseberry-mildew, and the Proposed Legislative Measures: E. S. Salmon.—The Bionomics of the Calypterate Muscidæ, and their Economic Significance: C. Gordon Hewitt.

FRIDAY, July 5.

Geologists' Association, at 8.—The Geology of the Appleby District, Westmorland: Dr. J. E. Marr, F.R.S.

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